AMENDMENTS TO THE CLAIMS

Please amend claims 1, 6, and 13 and add new claim 20, such that the status of the claims is as follows:

1. (Currently Amended) A magnetic data storage and retrieval system comprising:

a rotatable magnetic disc having a readback signal stored over a section of the magnetic disc;

a transducing head for reading the readback signal from the magnetic disc, the transducing head being positioned to fly at a fly height with respect to the magnetic disc when the magnetic disc is rotated; [[and]]

means for processing the readback signal to calculate a dynamic harmonic ratio as a function of time; and

means for calculating head media modulation as a function of time from the dynamic harmonic ratio.

2. (Original) The magnetic data storage and retrieval system of claim 1 wherein the means for processing the readback signal to calculate a dynamic harmonic ratio includes forming sampling intervals and calculating a harmonic ratio measurement for each of the sampling intervals.

3.(Original) The magnetic data storage and retrieval system of claim 2 wherein the sampling intervals are 1 microsecond or shorter.

4. (Original) The magnetic data storage and retrieval system of claim 1 wherein the means for processing the readback signal to calculate a dynamic harmonic ratio includes digitizing the readback signal using a 1 GHz or faster sampling rate.

5. (Original) The magnetic data storage and retrieval system of claim 1 further comprising means for determining a frequency spectrum of the dynamic harmonic ratio.

6. (Currently Amended) A magnetic data storage and retrieval system comprising:

a rotatable magnetic disc having data stored therein;

a transducing head for reading a readback signal representative of the data from the magnetic disc as the transducing head is flying above the magnetic disc as the magnetic disc is rotated;

a data acquisition circuit for digitizing the readback signal; and

a processing circuit for (a) calculating a frequency spectrum of the readback signal for each of multiple selected sampling intervals of the readback signal, (b) calculating a harmonic ratio for each of the selected sampling intervals based on the calculated frequency spectrum for each of the selected sampling intervals, (c) generating a dynamic harmonic ratio for the readback signal from the harmonic ratio calculations, and (d) generating a head media modulation signal as a function of time from the dynamic harmonic ratio.

7. (Original) The magnetic data storage and retrieval system of claim 6 wherein the processing circuit determines a frequency spectrum of the dynamic harmonic ratio.

8. (Original) The magnetic data storage and retrieval system of claim 7 wherein the processing circuit determines a modulation frequency of the dynamic harmonic ratio for the readback signal.

9. (Original) The magnetic data storage and retrieval system of claim 8 wherein the processing circuit filters the head media modulation signal using the determined modulation frequency.

10. (Original) The magnetic data storage and retrieval system of claim 6 wherein the processing circuit calculates the harmonic ratio by dividing an instantaneous peak amplitude of a harmonic frequency of the readback signal by an instantaneous peak amplitude of a fundamental frequency of the readback signal.

11. (Original) The magnetic data storage and retrieval system of claim 6 wherein the processing circuit calculates the harmonic ratio by dividing an instantaneous peak amplitude of a third harmonic frequency of the readback signal by an instantaneous peak amplitude of a fundamental frequency of the readback signal.

12. (Original) The magnetic data storage and retrieval system of claim 10 wherein the processing circuit calculates the instantaneous peak amplitude of the fundamental and harmonic frequencies of the readback signal using a least squares curve fitting method.

13. (Currently Amended) A method for determining a dynamic harmonic ratio for an entire readback signal in a data storage and retrieval system comprising:

rotating a magnetic disc having a readback signal stored therein;

reading the readback signal from the magnetic disc with a transducing ~~transducing~~ head being positioned above the magnetic disc when the magnetic disc is rotated;

~~digitizing and~~

storing the readback signal;

calculating a frequency spectrum of the readback signal for each of multiple selected sampling intervals of the readback signal;

calculating a harmonic ratio for each of the selected sampling intervals based on the calculated frequency spectrum for each of the selected sampling intervals; and

generating a dynamic harmonic ratio for the readback signal from the harmonic ratio calculations; and

generating a head media modulation signal as a function of time from the dynamic harmonic ratio.

14. (Original) The method of claim 13 further including determining a frequency spectrum of the dynamic harmonic ratio.

15. (Original) The method of claim 13 further including calculating the harmonic ratio by dividing an instantaneous peak amplitude of a fundamental frequency of the readback signal by an instantaneous peak amplitude of harmonic frequency of the readback signal.

16. (Original) The method of claim 13 further including calculating the harmonic ratio by dividing an instantaneous peak amplitude of a third harmonic frequency of the readback signal by an instantaneous peak amplitude of a fundamental frequency of the readback signal.

17. (Original) The method of claim 15 further including calculating the instantaneous peak amplitude of the fundamental and harmonic frequencies of the readback signal using a least squares curve fitting method.

18. (Original) The method of claim 14 further including determining a modulation frequency of the dynamic harmonic ratio for the readback signal.

19. (Original) The method of claim 18 further including filtering the head media modulation signal using the determined modulation frequency.

20. (New) The method of claim 13 further including digitizing the readback signal.